"Hospital's Full-Up": The 1918 Influenza Pandemic

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Curtailing the human suffering associated with a catastrophic infectious disease outbreak presents two key operational challenges for health professionals: caring for the sick and dying and halting the outbreak. In providing for these two central activities, one can assume a manager's point of view, aptly engaged in a calculus of supply and demand. If x grams of anthrax, then y numbers of the sick and dying and z amounts of hospital beds, vaccines, antibiotics, and so on. Such a perspective is necessary in thinking through the range of potential effects and best- and worst-case scenarios and providing for the optimum protection of populations. A complementary point of view is that of the historian who attempts to understand an outbreak as it unfolds in real human time, discerning the complex effects of infectious disease as it works its way through the lives of individuals, families, and institutions.

In the event of a catastrophic epidemic initiated by a biological attack, would we be able to tend to large numbers of ill and dying people? Although the US health care system has never faced a scenario so chilling, history affords us a sobering glimpse of the burdens associated with a large-scale, lethal epidemic.¹

In 1918 and 1919, the Spanish influenza outbreak sickened one of every four Americans and caused more than 500,000 deaths in this country alone and more than 40 million worldwide. This devastation resulted from a disease with an estimated case mortality rate of 2.5%. The possible effects of a biological attack involving the agents of greatest concern are even more grim: The estimated mortality rate for untreated pneumonic plague approaches 100%; untreated inhalation anthrax, 90%; and smallpox, 30%.

Influenza overtook the United States in three lethal waves, incapacitating our cities at its peak in the fall of 1918. Baltimore, like other major cities, was heavily affected. Two-thirds of pandemic-related deaths occurred in October alone. More than 3,000 people succumbed to the disease. A severe worker shortage curtailed industrial production and government services. At least 25% of police officers, postal workers, sanitation workers, and firefighters failed to report for duty. Transportation, food supply, and communication networks were equally in peril. Gravediggers, also afflicted with flu, could not keep up with the demand for burials. Morgues were overflowing, some handling 10 times their normal capacity.

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The flu caused social disruption and massive loss of life on American soil when the nation was already in the throes of war. Medical, nursing, and hospital services buckled under the onslaught of acutely ill and dying patients. More than one third of doctors and even more nurses were serving overseas. Other critical support positions within hospitals—orderlies, custodians, cooks—were equally understaffed.

Health care workers were just as vulnerable to influenza as their patients. In some instances, fear of contagion kept caregivers from performing their duties. Practitioners and public health nurses faced overwhelming caseloads and frequently fielded demands for care among crowds in the street. Mounting numbers of patients delayed physician reporting of cases and deaths, making it difficult for health officials to determine the course of the epidemic and to evaluate controls such as closing public gathering places.

To overcome the physician shortage, the US Public Health Service dispatched its Volunteer Medical Service Corps using civilian practitioners who were unable to serve overseas. States took creative, sometimes desperate measures to compensate for too few doctors. Medical school graduations and board exams were expedited. Dentists were authorized as physicians. In an era lacking effective vaccines or drugs, there was little physicians could offer patients.

Hospitals were crippled by influenza's hold on urban populations. The bulwarks of health care took extraordinary steps to serve their communities. Hospitals lengthened staff hours, assigned student nurses and doctors full duties, discharged the least ill, and accepted only urgent admissions. Hallways, offices, porches, and tents housed an excess of patients. Some hospitals had to turn people away. Shortages of basic supplies such as linens, mattresses, bedpans, and gowns arose in some instances. Gymnasiums, state armories, parish halls, and other facilities were fashioned into warehouses of beds for the ill.

Home, and not hospital, was where most people struggled through a case of Spanish influenza. Without cures or preventive options, supportive care was critical. Scarce in number, nurses were essential in relieving the human suffering caused by Spanish flu. They cared for patients in hospitals and homes, provided reassurance, and instructed families in basic nursing techniques. When entire families were stricken, nurses even stepped in to assist with daily needs such as laundry, cooking, feeding, and child care.

In collaboration with the US Public Health Service, the Red Cross made fervid appeals to retired, private, and student nurses and women with any type of nursing experience to report for duty. Networks of social workers, visiting nurses, and Red Cross volunteers fanned out into communities helping homebound patients and their families.

Despite 80 years of medical advances and expansive growth in the health care industry, there remains great uncertainty about our capacity to respond to an infectious disease emergency. In many respects, we may be at a disadvantage today compared with 1918. Then most people were cared for by family members. Patients did not rely heavily on paid health professionals, nor did they expect today's sophisticated standards of care.

Hospitals are being financially squeezed by managed-care demands to reduce costs and by cuts in government reimbursement. To survive, hospitals have taken beds "off line" and turned to just-in-time inventories of staff and equipment. Even minor deviations from projected patient loads can create a crunch. Regional nursing shortages further complicate the problem.

These conditions were witnessed during the 1999–2000 flu season, an outbreak that was an anticipated yearly event, relatively mild, and short lived. A critical coast-to-coast shortage of staffed, acute beds touched off widespread ambulance diversions, severely crowded emergency rooms, and long delays in hospital admissions. Like the 1918 pandemic, demand for care rapidly outstripped capacity to respond nationwide.

The 1918 influenza pandemic poses a number of compelling questions:

- Can hospitals cope with people converging on them in large numbers?
- Are there enough health care workers to manage an infectious disease crisis?
- How will we protect health care workers from contagion?
- Are there adequate supplies, equipment, and medications for a sustained outbreak?
- Can public health officials get enough information from hospitals to manage a modern epidemic?
- Could we care for patients in their homes if health care facilities were overrun?
- Are we any better off today than our 1918 counterparts in our ability to handle a public health emergency?

REFERENCE

 Schoch-Spana M. Implications of pandemic influenza for bioterrorism response. Clin Infect Dis 2000;31:1409-1413